

CLAIMS

1. A method for capturing images under ultra-low illumination with high dynamic range comprising:
  - 5 capturing radiation by a pixel of an imager;
  - providing a column feedback circuit;
  - soft-resetting a pixel.
2. The method of claim 1, wherein said capturing radiation uses a pixel of an imager
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3. The method of claim 2, wherein said capturing radiation comprises an imager to convert radiation into to electrical signals.
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4. The method of claim 3, wherein said electrical signals comprises of a signal with very low noise or no noise at all.
5. The method of claim 2, wherein said imager comprises of a CMOS transistors.
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6. The method of claim 2, wherein said imager comprises of a FET transistors.
7. The method of claim 1, wherein said providing comprises of using a feedback scheme
8. The method of claim 7, wherein said feedback scheme comprises using a amplifier.

9. The method of claim 8, wherein said amplifier is an operational amplifier.
10. The method of claim 8, wherein said amplifier is of high gain.
- 5 11. The method of claim 1, wherein said soft-resetting a pixel comprises of a transistor.
12. The method of claim 11, wherein said transistor is a N-MOS transistor.
13. Apparatus for capturing images under ultra-low illumination with high dynamic  
10 range comprising:
  - a pixel of an imager;
  - a column feedback circuit;
  - a soft-resetting transistor.
14. The apparatus of claim 13, wherein said pixel of an imager is a CMOS.  
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15. The apparatus of claim 14, wherein said imager converts radiation into to electrical  
signals.
- 20 16. The apparatus of claim 15, wherein said electrical signals contains very low noise or  
no noise at all.
17. The apparatus of claim 14, wherein said imager comprises of a CMOS transistors.

18. The apparatus of claim 14, wherein said imager comprises of a FET transistors.

19. The apparatus of claim 13, wherein said feedback scheme comprises of a circuit  
outside the said pixel.

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20. The apparatus of claim 13, wherein said feedback scheme comprises using a  
amplifier.

10 21. The apparatus of claim 19, wherein said amplifier comprises of an operational  
amplifier.

22. The apparatus of claim 19, wherein said amplifier is of high gain.

15 23. The apparatus of claim 13, wherein said soft-resetting transistor is a N-MOS  
transistor.

24. The apparatus of claim 22, wherein said transistor has its drain terminal connected to  
the gate terminal of a reset transistor in a pixel.

20 25. The apparatus of claim 22, wherein said transistor has its source terminal connected  
to a feedback voltage bus.